

Tripping On Wires: The Wireless Body: Who is Improvising?

Pauline Oliveros, Rensselaer Polytechnic Institute

“A transhuman is a person who seeks to become a posthuman by striving to enhance themselves [sic] physically, mentally and spiritually using technological means” (More, qtd. in Sandberg).

We are in the transhuman age.

“[A] posthuman [is a person] of unprecedented physical, intellectual, and psychological capacity, self-programming, self-constituting, [a] potentially immortal, unlimited individual” (More, qtd. in Sandberg).

We are observing and participating in the hybridization of humans and computers: the merger of humans and computers, or what is referred to in scientific circles as the singularity, predicted to arrive by the end of the 21st century.

“By the time machines make a case for themselves in a convincing way and have all the subtle cues indicative of emotional reaction, there won't be a clear distinction between machine and human” (Kurzweil, qtd. in Beard).

How has this situation come to pass? What is the underlying theme that drives humans toward this merger or singularity? What will our music be like in the later twenty-first century? Who will be creating this music and performing it, and who will be listening? How will it function and in what kind of society? How wide is the digital divide? Who will be left behind?

I have been tripping on wires on stage and off stage for half a century of this now rapidly accelerating technological change in music instrumentation. The body is an instrument of choice for directly making music with voice, hands, feet, and body resonance. This has not essentially changed. However, the distancing of the body in making music began with the first discovered technology for making musical sound as an extension of the body, such as blowing air through a hollow bird bone as a simple flute or whistle. The bird bone whistle is one of the oldest instruments found so far, dating to the upper Paleolithic period (Toth and Schick). Through the millennia, the distancing of the body by instrumentation has increased exponentially until, with the inventions of recording technology and radio broadcasting, music could be completely disembodied.

I have lived for sixty-eight percent of the twentieth century and four percent of the twenty-first century. At this juncture I have the perspective of seventy-two years experience with technological change - particularly with music technology. I have attempted over the years to enhance my musical understanding, abilities, and performance as a human by using the musical tools that are available to me as an

extension of my body. As I continue to adopt new technologies as tools, I am participating in transhuman activity. Will I live to enter the posthuman age?

Little did I realize in 1942 that my fascination with the accordion at age nine would continue to this day and that I would re-tune and use the accordion with recording and electronics as I do now. It is humbling to realize how a simple technology, such as a small metal reed that vibrates freely when air flows through it in my accordion, has had a very lengthy presence in music history. The free reed vibrates in all the Asian mouth organs beginning with the Chinese Sheng at least 4000 years ago (“Eastern Free Reed Instruments”). The free reed appeared in more modern Western instruments such as the accordion, harmonica, bandoneon, and concertina in the mid-nineteenth century (“A Brief History”). These instruments, unlike the Asian mouth organs, all distance the performer from his or her own breath. The bellows replace the lungs; the fingers that touch buttons and keys replace lips, tongue, and windpipe.

I was born into a time of disembodied music that I heard on the radio and phonograph. Recording had already existed since the late nineteenth century. Radio broadcast in America was only about twenty-five years old when I was born in 1932. Radio and recording grew rapidly and continue to be primary sources for exposure to wider and wider ranges of music than have ever been possible before. I took that music in my childhood for granted as I did the live piano music that I heard in my home each day. I did not realize how the wire recorder we owned by 1946 would evolve and be so important in my career and in the evolution of musicianship in general.

I have noticed how accomplished musicians are today compared with musicians of forty years ago or even twenty years ago. The young musicians that I encounter today can perform almost anything and are often adventurous and open to new work. Younger audiences are more adventurous and open too. This capacity and openness was not so true in the past. I attribute this development to the availability of audio and video recording of performances, and of immediate playback for the performers and their teachers. Human musicians may compare performances, improvisations of their own, and of all manner of musical repertoire to enhance their abilities, techniques, and understanding through this technology.

When you play back a recording of your own playing you listen to what you thought you heard and you begin to perceive what you did not hear consciously; thus, there is interactivity, stimulation of memory, and consciousness. (This was true of the introduction of the alphabet and writing as well in the history of consciousness – technologies support memory.) Humans plus technology equal transhuman activity. We are experiencing a new wave of consciousness because of our relationship with technology.

The first tool of my trade that had a wire to plug in (and trip on) was my Eico tape recorder that I received from my mother for my birthday in 1953. My first impulse was to put the microphone on the windowsill of my San Francisco apartment and record

whatever was sounding outside. I learned that the microphone was hearing sounds that I missed while listening during the recording. The challenge of this perception caused me to vow to listen to everything all the time and to remind myself when I was not listening. I have been tripping on listening ever since and minding the reminders. My life and listening were expanded and changed.

The story of my early relationship with the tape recorder is the beginning of my more conscious relationship with technology and the body. Tape recorders were not common in 1953 and had just become available for consumers after their German origin in World War Two.¹ My understanding of listening was changed by my experience even though my ears were physically the same. The microphone and tape recorder became extensions of my body and amplified my hearing. The tape recorder became an essential tool in my development as a composer, performer, and improviser. The tape recorder enabled me to more deeply access body consciousness through improvisation. From the moment I recorded my practice sessions, for me or for my students, the immediate feedback improved the speed of error correction for performance. I incorporated improvisation and recording as part of my composing. I notated what I liked from recorded improvisations.

By 1959 I had made my first tape piece to be included on the initial concert of what was to become the San Francisco Tape Music Center (SFTMC). There were no electronic music studios available to me at the time. My friend Ramon Sender Barayon started a studio in the attic at the San Francisco Conservatory of Music. I made my piece at home using only the tape recorder at seven-and-a-half and three-and-three-quarters ips plus a special feature that allowed me to hand wind the tape in record mode so that I had manual variable speed.² I discovered this feature through experimentation, as it was not a documented use of the machine. I was improvising with sounds and with the uses of the recorder. I imagined how an improvised passage recorded at high speed would sound at low speed and *vice versa*. Thus my real-time improvisation added a new layer that involved projecting future modification and manipulation of the tape recorder as an instrument. Since I had no other electronic equipment I recorded through cardboard tubes for filters, put the microphone in the bathtub for reverberation and amplified small vibrating objects on an apple box with a contact microphone. The resulting four-channel piece was called *Time Perspectives*. The synch was done with two stereo tape recorders. (There were no four channel tape recorders at the time.) Ramon and I lined up the tape in the long halls of the San Francisco Conservatory to get the starting points. This piece is now forty-five years old.

(See HTML version to listen to a sample from *Time Perspectives*)

From the beginning, my work in electronic music proceeded from a performance relationship with sounds and the characteristics of the workings of the tape recorder. For *Time Perspectives* I improvised long sections of the piece for each channel and avoided cutting and splicing as much as possible. I had improvised a rudimentary home electronic music studio and improvised the music. My later electronic pieces such as *I of IV* and *Bye Bye Butterfly* were entirely improvised in real time in a studio with hardwired

equipment that was hardly convenient to move onto a stage. The classical electronic music studio was monolithic! Thus my studio improvisations had to be presented on tape. Throughout the 1960s I made a lot of music on tape. I also performed live as much as possible. We always included group improvisation in our SFTMC concerts with acoustic instruments as well as tape and sometimes a long tape loop.

When I left San Francisco to teach and establish the electronic music program at the University of California, San Diego (UCSD), I had a twelve-hour farewell concert in an Embarcadero loft in San Francisco and played all the tape music that I had made so far. (Morton Feldman attended that concert and later introduced me at a party in New York as the foremost lady composer in the USA I appreciated his validation; however, I corrected his language then and there in front of all telling him that “lady” was not necessarily the ID of choice since it was used to belittle women so often in those times.) Until recently the only music available of mine on record from that period was *I of IV* and *Bye Bye Butterfly*. I still have hours of unrecognized, unreleased electronic music.

My first job was the directorship of the Tape Music Center at Mills College from 1966 to 1967 (now The Center for Contemporary Music – CCM). The SFTMC was moved there from San Francisco in 1966. There I combined my tape techniques with the newly invented Buchla Modular Synthesizer and developed what was to become the Expanded Instrument System – EIS, an improvisational environment that I use today for solo performances and with the Deep Listening Band.³

I left Mills for UCSD in 1967 where I was invited to establish the electronic music program for the graduate students. UCSD was a great window of opportunity for me. The atmosphere of the department was open for experimentation and the mission was to educate the students to new music and ideas about music. In addition to electronic music courses, I taught The Nature of Music – a large service course that included making tape pieces by cut and splice editing from pre-recorded sounds, group improvisation with found instruments, and graphic scoring.

In 1970, I began composing my *Sonic Meditations* and studying the structure of human consciousness. I formed a women’s group that met at my house in Leucadia once a week. We did body and dream work together along with improvisations and *Sonic Meditations*.

Sonic Meditations were explorations on my part concerning how attention is directed in creative work and spontaneous performance. I needed to find a way into how the mind works to make music. Electronic music had expanded me. The electricity in my own body seemed to be flowing differently than before my exposure to electronic sound. However, there were no answers for me other than my own experiences. There were no guidebooks concerning the effects of improvisation and new sounds on the body. I had to find my own way.

I continued to compose, and insisted on live electronic performance rather than producing pieces in a studio. I had devised a way to use tape delay as a performance tool and extension of my accordion. I think of delay systems as time machines. I play a sound in the present that will come back in the future. When it comes back it is a part of the past. Thus time is expanded to past, present, and future as performance continuum.

Tape delay was cumbersome with large tape decks to lug around when touring. Nevertheless I and others persisted. I wrote an article in 1969 about the future of delay systems (Oliveros). I had hit some limitations and wished for more flexibility for adjustable timings and modifications of the delayed sounds in real time as I improvised. The built-in limitations of technologies provoke alternative ways to use them, just as the hand winding of tape during recording had provided me with variable speed with my second tape recorder. The distance between the record head and the playback head of a tape recorder had not been intended or engineered for a delay loop but musicians soon discovered the potential and used it.

After I left UCSD, I acquired a couple of Lexicon PCM 42 delay processors in 1983, one for each hand of my accordion (bass and treble). For a time I enjoyed the performance aspects available with these instruments: modulation, pedal controlled VCO for pitch bending, looping, and feedback. I realized that I wanted numerous multiple delay processors and a way to control them simultaneously and instantaneously during performance. I had challenged myself as a performer by entering the expanded time domain with my EIS to deal not only with what I was playing in the present but with the result in a later time, or times, in counterpoint with the present. Actually, I had begun this work with *Time Perspectives* by integrating recorded passages improvised for later speed modification. Complexity in my improvisations was evolving from a very simple idea - feedback through time delays. It was exciting! Both hands and feet were busy performing.

I experienced a new kind of performance frustration - how could I control multiple performance parameters spontaneously during improvisation when my hands and feet were too busy to access other controls? Interactive software is the answer for now, of course.

Performance algorithms in Max/MSP provided some relief.⁴ I composed algorithms that improvise using material that I generate with my accordion or voice yet the interface using computer keyboard and mouse, pedal board and faders is still necessary and unsatisfactory.

My body is yearning to participate in dealing with the more than eighty-five performance parameters in the interface in an integral way. Once the perception through listening indicates a response, the parameter change needs to be available spontaneously in the interface in a multi-dimensional way. The physical performance motions need to be accomplished smoothly, without breaking attention from the music. Additionally, I need a monitoring system that gives me the ability to hear the spatialized performance from

any perspective in the performance space - I need to always be in the field of sound displayed by the performance. What if my ears could detach and fly around the space, merge with any other ears in the audience? I want to listen from the perspective of audience members as well as from my own point-of-source perspective.

Returning to recording, distancing the body and disembodied music: why the intense desire on the part of humans to record? To clone? Why the millennial evolution of technology that increasingly distances the body in music-making, and what is the meaning of disembodied music?

All humans (so far as I know) are confronted with mortality and the desire to overcome mortality. Recording and cloning represent a kind of permanence. (Even so, media impermanence is also a threat.) The headlong thrust in research all over the world to move towards the singularity, or merger, of humans and technology in a posthuman future is a way to overcome the “weakness of the flesh” – to avoid impermanence – to delay or eliminate death. What, then, about birth?

In order to resolve my increasing performance frustration – how to access and control more than eighty-five parameters instantaneously – what if the technology was all on board a posthuman body? No wires to trip on – new world - new frontiers - new trip - no return. Software obviously has to have sentience, intercommunication, and memory; in other words, consciousness. At this point, who is improvising?

Acknowledgements

This paper was first presented as the keynote address for the conference “Powering Up/Powering Down” at the University of California, San Diego, January 30, 2004 as “Tripping over Wires: The Wireless Body.”

Notes

¹ Since I began my work with tape recorders soon after World War Two, I am reminded that this tool was used primarily by the Nazis for gathering intelligence and propaganda. The Nazis did have portable magnetic tape recorders that were of lesser quality than the studio models. For more information about the history of tape recording see Mullin.

² Reel to reel tape is measured according to the speed at which it travels from the feed reel to the take-up reel in inches per second, or ips.

³ For more information on Pauline Oliveros’ work see <http://www.deeplisting.org>

⁴ Created by Miller Puckette at I.R.C.A.M. and further developed by David Zicarelli, “Max/MSP is a graphical programming environment, which means you create your own software using a visual toolkit of objects, and connect them together with patch cords. The basic environment that includes MIDI, control, user interface, and timing objects is called Max.[. . .] MSP, [is] a set of audio processing objects that do everything from interactive filter design to hard disk recording” (“AMax/MSP Overview”).

Works Cited

- Baard, Erik. "Inside the Movement for Posthuman Rights Cyborg Liberation Front." *Village Voice*. 30 July-5 Aug 2003. 30 July 2004. <http://www.villagevoice.com/issues/0331/baard.php>
- "Max/MSP Overview." *Cycling '74*. 30 July 2004. http://www.cycling74.com/products/maxmsp_2.html
- Missin, Pat. "A Brief History of Mouth Blown Free Reed Instruments." 2002. 30 July 2004. <http://www.patmissin.com/history/history.html>
- Missin, Pat. "Eastern Free Reed Instruments: Mouth Organs with Circular Arrangement of Pipes." 2003. 30 July 2004. <http://www.patmissin.com/history/eastern.html>
- Mullin, John. "John (Jack) T. Mullin (1913-99) Recalls the American Development of the Tape Recorder." *Bing Crosby Internet Museum*. Steven Lewis. June 1996. 30 July 2004. <http://www.kcmetro.cc.mo.us/pennvalley/biology/lewis/crosby/mullin.htm>
- Oliveros, Pauline. "Tape Delay Techniques for Electronic Music Composers." *Software for People: Collected essays 1962-1981*. Baltimore, MD: Smith Publications, 1984.
- Sandberg, Anders. "Transhuman Terminology Subpage, P." 11 March 2000. 30 July 2004. <http://www.aleph.se/Trans/Words/p.html>
- Sandberg, Anders. "Transhuman Terminology Subpage, T." 11 March 2000. 30 July 2004. <http://www.aleph.se/Trans/Words/t.html>
- Toth, Nicholas, and Kathy Schick. "Stone Age." *Microsoft7 Encarta7 Online Encyclopedia*. 4 August 2004. <http://encarta.msn.com>